

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
73544 Hwy 64
Meeker, CO 81641

ENVIRONMENTAL ASSESSMENT

NUMBER: CO-110-2005-060-EA

CASEFILE/PROJECT NUMBER (optional): COC68435

PROJECT NAME: Shell Frontier O&G 2005 Hydrology Program

LEGAL DESCRIPTION: Sixth Principal Meridian, Colorado

T. 2 S., R. 98 W.,
Sec. 4, lot 15;
Sec. 7, NE $\frac{1}{4}$ NE $\frac{1}{4}$;
Sec. 10, SE $\frac{1}{4}$ SE $\frac{1}{4}$;
Sec. 15, lot 6;
Sec. 21, SE $\frac{1}{4}$ SW $\frac{1}{4}$.

T. 1 S., R. 99 W.,
Sec. 1, lot 8.

T. 2 S., R. 99 W.,
Sec. 1, lot 2, 4, NW $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$;
Sec. 2, SE $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$.

APPLICANT: Shell Frontier Oil & Gas Inc.

ISSUES AND CONCERNS (optional): Well #46-2-299, proposed access road that arises in section 1, at well #43-1-299 pad location has not been adequately inventoried. Furthermore, well #43-1-299 pad and access road do not have any inventory data available, no work may proceed on the pad or access road until an inventory report on the un-inventoried portion of the access road, prepared by an approved archeological contractor, has been submitted to the BLM and approved, with additional stipulations as needed.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Background/Introduction: Shell Frontier Oil & Gas Inc. has submitted their drilling plan for the 2005 Hydrology Program.

Proposed Action: Shell frontier Oil & Gas Inc proposes to build 15 well pads that will have 7 hydrologic monitoring wells on each pad. The proposed action is for the construction and maintenance of these wells pads and monitoring wells. Main access to these pads will be by existing roads and county roads. Individual access roads to each well pad will be cut to each well site with minimal additional surface disturbance currently being planned. The table below summarizes the pad and access disturbance for the project.

Well Pad (7 holes each pad) Summary					
Well Pad Number	Pad Dimensions	Access Road Dimensions	Acres disturbed from Pad	Acres disturbed from access	Total Disturbance per well
19-2	175' x 220'	14' x 528'	0.89	0.17	1.06
20-7	175' x 220'	14' x 7,867'	0.89	2.53	3.42
21-1	175' x 220'	14' x 260'	0.89	0.08	0.97
22-4*	175' x 220'	14' x 2,376'	0.89	0.76	1.65
23-15	175' x 220'	14' x 7,075'	0.89	2.27	3.16
24-21	175' x 220'	14' x 630'	0.89	0.20	1.09
25-10	175' x 220'	14' x 1,478'	0.89	0.48	1.37
39-1	175' x 220'	14' x 1,742'	0.89	0.56	1.45
40-1	150' x 200'	14' x 792'	0.69	0.25	0.94
41-1	150' x 200'	14' x 3,379'	0.69	1.09	1.78
42-1	150' x 200'	14' x 1,267'	0.69	0.41	1.1
43-1	150' x 200'	14' x 792'	0.69	0.25	0.94
44-2	150' x 200'	14' x 3,010'	0.69	0.97	1.66
45-1	150' x 200'	14' x 2,060'	0.69	0.66	1.45
46-2	150' x 200'	14' x 1,954'	0.69	0.63	1.32
Totals			11.95	11.31	23.26

*This pad is located within the boundaries of a R&PP lease for the CSU study plots & will probably have to be moved.

A brush hog (or similar equipment) will be used to clear the paths to the well sites when appropriate, otherwise a dozer will be used to clear the location and build the drill pad. The access roads will be approximately 14 feet in width. Culverts will only be installed if deemed necessary. Travel beyond the access roads shall be avoided. Minimal traffic is expected for all the well site activities.

Road drainage crossing shall be of the typical dry creek drainage crossing type. Crossings shall be designed so they will not cause siltation or the accumulation of debris in the drainage crossing nor shall the drainage be blocked by the roadbed. Erosion of the drainage ditches by runoff water shall be prevented by diverting water off at frequent intervals by means of cutouts.

Road upgrading or drill pad construction shall not be allowed during muddy or adverse weather conditions. Although none is expected to be required, surfacing materials would be purchased from a local contractor having a permitted source of the material in the area. Gates, cattle guards, or fence cuts are not anticipated. The proposed well site roads shall be flagged prior to bush hogging and/or dozer work. Although not anticipated due to minimal traffic, dust control will be provided if deemed necessary by watering the roads and/or locations.

Construction would commence as soon as possible after issuance of a permit.

No Action Alternative: Under the no action alternative, the project would not be permitted and there would not be any impacts.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD: None

NEED FOR THE ACTION: Shell Frontier Oil & Gas Inc. has applied for 15 pads that include access roads and there will be 7 holes drilled on each pad.

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Date Approved: July 1, 1997

Decision Number/Page: Pages 2-49 thru 2-52

Decision Language: “To make public lands available for the siting of public and private facilities through the issuance of applicable land use authorizations, in a manner that provides for reasonable protection of other resource values.”

**AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES /
MITIGATION MEASURES:**

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in specific elements listed below:

CRITICAL ELEMENTS

AIR QUALITY

Affected Environment: The project area is within a Class II Prevention of Significant Deterioration (PSD) air quality area. No Class I PSD areas are within 40 miles of the project area. The principal air quality parameter likely to be affected by construction of the pipeline is the inhalable particulate level (PM₁₀ - particles ten microns or less in diameter) associated with fugitive dust. Although no monitoring data are available for the survey area, it can be surmised that the air quality is good because the Colorado Air Pollution Control Division (APCD)

estimates the maximum PM₁₀ levels (24-hour average) in rural portions of western Colorado to be less than 50 micrograms per cubic meter. This estimate is well below the National Ambient Air Quality Standard (NAAQS) for PM₁₀ (24-hour average) of 150 µg/m³.

Environmental Consequences of the Proposed Action: The construction of the well pads and access roads would result in short term, local impacts on air quality during and after construction, due to dust being blown into the air. However, airborne particulate matter would not exceed Colorado air quality standards on an hourly or daily basis. Following successful revegetation of the site, airborne particulate matter should return to near pre-construction levels.

Environmental Consequences of the No Action Alternative: None

Mitigation: The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so. To minimize production of fugitive dust, vehicle speeds shall not exceed 15 mph or the application of a dust suppressant (e.g. water or “Dust Stop”) will be required during dry periods. Any stockpiled soils associated with road repair or upgrading must be covered.

CULTURAL RESOURCES

Affected Environment: Well #19-2-299 pad and access road: The proposed well location and access road appear to be located in an area inventoried at the Class III (100% pedestrian) level in 1981 (Knox 1981, Compliance Dated 8/18/1981). Under the current Colorado Cultural Resources protocol that inventory data is too old to be considered adequate and acceptable. However, if the proposed hole can be drilled within the existing disturbance of the old Sun Gas 2-2-99 well, and the proposed access can exactly follow the old well access road there are no known cultural resources present. The proposed pad location has been inventoried at the Class III (100% pedestrian) level (Conner et al 2005, Compliance Dated 5/13/2005) with no cultural resources identified in the inventoried area.

Well #20-7-299 pad and access road has been inventoried at the Class III (100% pedestrian) level (Conner et al 2005, compliance Dated 5/13/2005) with one site located adjacent to the proposed access road. For wells #22-4-298, #23-15-298, #24-21-298, and #25-10-298 proposed pads and access roads were inventoried in the same survey with no new cultural resources identified in the area inventoried.

Wells #21-1-299, #39-1-299, #40-1-299, #41-1-299, and #42-1-299, #44-2-299, #45-1-299, proposed pads and access roads were inventoried at the Class III (100% pedestrian) level (Conner and Davenport 2004, Compliance Dated 12/15/2004) with no new cultural resources identified in the area inventoried.

Well #46-2-299 pad has been inventoried at the Class III (100% pedestrian) level (Conner et al. 2004, Compliance Dated 12/17/2004) with no new cultural resources identified in the proposed wall pad area. The proposed access road for well #46-2-299 that arises in section 1 at the #43-1-

299 pad location has not been adequately inventoried. Furthermore, well #43-1-299 pad and access road do not have any inventory data available.

Environmental Consequences of the Proposed Action: Well pad and access road for well #43-1-299 has not had an inventory. Until an inventory is completed impacts to this site can not be determined. For wells #19-2-299 and #20-7-299 pad and access road: If mitigation measures are strictly adhered to there would be no new impacts to cultural resources. For all other well pad locations and access roads, the proposed action will not impact any known cultural resources.

Environmental Consequences of the No Action Alternative: There would be no new impacts to cultural resources under the No Action Alternative.

Mitigation: For all wells and access roads, 1. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

2. Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

3. In addition to the above standard stipulations, for well #20-7-299 pad and access road: all access road construction and maintenance activity must avoid site 5RB 4987.

4. Well #43-1-299 pad and access road: No work may proceed on the pad or access road until an inventory report prepared by an approved archeological contractor has been submitted to the BLM and approved, with additional stipulations as needed.

5. Well #46-2-299 access and pad locations, no work may proceed on the pad or access road until an inventory report on the un-inventoried portion of the access road, prepared by an approved archeological contractor, has been submitted to the BLM and approved, with additional stipulations as needed.

INVASIVE, NON-NATIVE SPECIES

Affected Environment: Yellow toadflax, spotted and diffuse knapweeds are noxious weeds known to occur in or close to the project area. The invasive alien cheatgrass will also readily invade disturbed sites at these elevations and precipitation zones in Piceance Basin

Environmental Consequences of the Proposed Action: Earthen disturbance created by the proposed action, though relatively minor, will create safe sites for the invasion of noxious and invasive species. This impact will be reduced or rendered insignificant if the proposed mitigation is applied.

Environmental Consequences of the No Action Alternative: There will be no change from the present situation

Mitigation: Monitor the project site for a minimum of three years post disturbance for the occurrence of noxious/invasive species. Eradicate all noxious/invasive species using materials and methods approved by the Authorized Officer.

MIGRATORY BIRDS

Affected Environment: An array of migratory birds fulfill nesting functions in the project area's predominantly pinyon-juniper woodlands and Wyoming big sagebrush shrublands from late May through early August. Species associated with these woodland communities are typical and widely represented in the Resource Area and region. Those bird populations identified as having higher conservation interest (i.e., Rocky Mountain Bird Observatory, Partners in Flight program) include Brewer's sparrow (sagebrush), and gray flycatcher, pinyon jay, juniper titmouse, black-throated gray warbler, and violet-green swallow in the woodlands. These birds, too, are well distributed at appropriate densities in this Resource Area's extensive woodland habitats.

Environmental Consequences of the Proposed Action: Project construction and drilling would be initiated in mid-July 2005. It is anticipated that all 15 pads and their access roads would be constructed in the late summer and fall of 2005. Drilling would take place on an indeterminate schedule for a year. Heavy equipment use and high levels of activity associated with site construction would occur outside the migratory bird nesting season and would have no potential to disrupt nesting activities. Drilling activity on several or more wells may occur during the 2006 breeding season, but this activity would be confined to a previously cleared pad and would be unlikely to fail ongoing nest attempts in adjacent habitats, except for the very few

that may occur on the immediate pad margin (unlikely for birds of high conservation interest). It is believed improbable that more than a dozen migratory bird nesting attempts would be adversely influenced by the 2006 drilling program. This temporary effect would have no discernible influence on the abundance of local breeding bird populations nor the viability of any breeding bird population affiliated with the pinyon-juniper or sagebrush type at any landscape scale. One daily vehicle trip for monitoring each site through the 2006-2008 nesting seasons would not be expected to disrupt ongoing nesting by birds that may situate nests in closer proximity to the access road.

Environmental Consequences of the No Action Alternative: There would be no action authorized that would have potential to disrupt the breeding activities of migratory birds.

Mitigation: See Terrestrial Wildlife section.

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES (includes a finding on Standard 4)

Affected Environment: The project area is derived primarily from the Uintah formation with exposures of the Green River formation along the valley slopes. The relatively barren exposures of the Green River formation are of considerable interest, as the rare plants known to occur within the Piceance Basin all occur on the Green River shale barrens.

Environmental Consequences of the Proposed Action: There would be no consequences provided that an on the ground pedestrian survey is conducted prior to construction during flowering season. Twelve (12) of the proposed locations have had an inventory conducted in 2004 by WestWater Engineering. The remaining three (3) proposed locations are outside the perimeter of the inventory conducted in 2004. WestWater plans to conduct this inventory this spring during the flowering time and submit a report.

Environmental Consequences of the No Action Alternative: None

Mitigation: The following well locations should not be constructed until the inventory has been completed with a report submitted to this office for review by the Specialist and reveals there will be no affect to Threatened or Sensitive Species of plants.

- Well # 25-10-298
- Well # 23-15-298
- Well # 24-21-298

Finding on the Public Land Health Standard for Threatened & Endangered species: There is no reasonable likelihood that the proposed action or no action alternative would have an influence on the condition or function of Threatened, Endangered, or Sensitive plant species. Thus there would be no effect on achieving the land health standard.

WASTES, HAZARDOUS OR SOLID

Affected Environment: There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored or disposed of at sites included in the project area.

Environmental Consequences of the Proposed Action: No listed or extremely hazardous materials in excess of threshold quantities are proposed for use in this project. While commercial preparations of fuels and lubricants proposed for use may contain some hazardous constituents, they would be stored, used and transported in a manner consistent with applicable laws, and the generation of hazardous wastes would not be anticipated. Solid wastes would be properly disposed of.

Environmental Consequences of the No Action Alternative: No hazardous or other solid wastes would be generated under the no-action alternative.

Mitigation: The applicant shall be required to collect and properly dispose of any solid wastes generated by the proposed actions.

WATER QUALITY, SURFACE AND GROUND (includes a finding on Standard 5)

Affected Environment: Surface Water: The proposed actions are located within stream segments 13b, 16, and 20 of the White River Basin. A review of the Colorado's 1989 Nonpoint Source Assessment Report (plus updates), the 305(b) report, the 303(d) list and the White River Resource Area RMP was done to see if any water quality concerns have been identified. It should be noted that the main stem of Yellow creek (stream segment 13b) has been identified by the state as a perennial watershed NOT meeting water quality standards for suspended sediment

and salinity. The State has classified stream segments 13b and 16 as "Use Protected" and further designated as beneficial for the following uses: Warm Aquatic Life 2, Recreation 2, and Agriculture. The antidegradation review requirements in the Antidegradation Rule are not applicable to waters designated use-protected. For those waters, only the protection specified in each reach will apply. For these reaches, minimum standards for four parameters have been listed. These parameters are: dissolved oxygen = 5.0 mg/l, pH = 6.5 - 9.0, Fecal Coliform = 2000/100 ml, and 630/100 ml E. coli. Stream segment 20 has not been designated "Use Protected" and therefore the Antidegradation Rule is applicable to this reach. Table values outline maximum concentration levels for physical, biological, inorganic, and metallic substances in this reach.

Ground Water: The following table is a brief summary of ground water quality data from existing hydrologic monitoring wells nearest the proposed action. The information listed has been provided by Shell Frontier Oil & Gas Inc.

Well ID	Sample Date	SC ($\mu\text{S}/\text{cm}@25^\circ\text{C}$)	pH	TDS (mg/L)	Fluoride (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
B2-15-A	2/22/2005	980	9.78	639	5.3	0.6	202	9.4	11	110

B2-15-L5	2/22/2005	1136	9.09	662	7.5	5.1	232	15.7	105	
B3-14-C	12/19/2002			560		Only one Inorganic Result page available.				
B4-21-A	2/3/2005	1920	12.07	1150	0.3		279	42.3	29	330
B4-21-L5	2/3/2005	1238	9.94	813	3.4	1.5	269	9.8	4	260
B6-23-A	2/3/2005	834	8.13	517	9.6	8.2	203		5	90
B6-23-L4	2/3/2005	2110	7.54	1340	16.5	41.3	460	2.0	10	320
B6-23-L5	2/3/2005	904	8.51	548	15.5	1.7	247	2.8	5	
B7-28-U	8/18/2004	1803	8.31	1270		89.1	226	1.0	14	490
B8-2-L1	10/28/2002			3040		Only one Inorganic Result page available.				
B9-26-L4	5/26/2004	2380	7.33	1730	55	12.8	817	2.1	24	60
W1-14-L4	2/3/2005	2170	7.65	1330	57.0	19.7	499	1.6	8	210

The proposed wells will be monitoring deep ground water located in various zones of the Green River Formation. Water quality in these zones can be expected to be similar in composition to that of the corresponding zone listed above.

Environmental Consequences of the Proposed Action: Construction of the access roads and well pads will result in temporary exposure of soils to erosional processes. Heavy equipment used during construction combined with the removal of ground cover will increase erosive potential due to runoff (overland flows) and raindrop impact during storm events. Increased erosion will adversely impact water quality and stream channel/bank stability in downstream reaches.

Discharging of deep ground water on the surface will result in precipitation of dissolved solids over the affected area as water evaporates. Increased precipitate concentrations will adversely impact vegetation in the affected area. In addition, precipitate on the ground surface will be dissolved and transported down the drainage basin further deteriorating water quality in lower reaches.

Local ground water may be contaminated if a spill results or pit contents (deep ground water) are allowed to infiltrate soils. Cross aquifer contamination is likely if aquifers of varying water quality are allowed to mix.

Environmental Consequences of the No Action Alternative: None

Mitigation: No operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies. The operator will be responsible for complying with all local, state, and federal water quality regulations as well as providing documentation to the BLM that they have done so.

To mitigate contamination of surface and ground water, environmentally unfriendly substances (e.g. diesel and deep ground water) must not be allowed to contact soils. The use of impermeable matting under equipment is suggested to intercept such contaminants prior to contacting soils. Deep ground water will NOT be disposed of on the surface without a BLM approved water treatment, disposal and monitoring plan.

To mitigate cross aquifer contamination, any hole proposed for groundwater monitoring must be competed and cemented to isolate all aquifer intervals that show significant head differences or changes in water quality.

Comply with “Gold Book” surface operating standards for constructing well pads and access roads. Use drain dips in place of culverts on slopes exceeding 10%. Provide energy dissipaters at culvert outlets or drainage dips to minimize additional erosion.

Finding on the Public Land Health Standard for water quality: Water quality in stream segments 16 and 20 currently meet standards set by the state. However, Yellow Creek (stream segment 13b) as been identified by the state as a perennial stream not meeting standards for suspended sediment and salinity. The proposed action may result in increased run-off which would elevate sediment loads in stream reaches below the proposed action. Spills or leaks of contaminants would further reduce water quality downstream adversely affecting macroinvertebrates, vertebrates, and algae populations. However, following proper mitigation/reclamation procedures, water quality should not be greatly compromised and would continue to meet the state standards.

CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED:

No ACEC’s, flood plains, riparian or wetland systems (as well as aquatic habitats), prime and unique farmlands, or Wild and Scenic Rivers, and threatened, endangered or sensitive plants or animals exist within the area affected by the proposed action. For threatened, endangered and sensitive plant and animal species, the Public Land Health Standard is not applicable since neither the proposed nor the no-action alternative would have any effective influence on populations of, or habitats potentially occupied by, special status species. Similarly, there is no reasonable likelihood that the proposed or no action alternative would have any influence on distant riparian, wetland, or aquatic habitats and would therefore have no affect on the status of the Public Land Health Standards. There are also no Native American religious or environmental justice concerns associated with the proposed action.

NON-CRITICAL ELEMENTS

The following elements **must** be addressed due to the involvement of Standards for Public Land Health:

SOILS (includes a finding on Standard 1)

Affected Environment: The following data is a product of an order III soil survey conducted by the NRCS in Rio Blanco County, CO. The accompanying table highlights important soil characteristics. A complete summary of this information can be found at the White River Field Office.

CSU-1 “fragile” soils will be encountered along the first 0.11 miles of the last 0.40 miles of access route ID# 2. Controlled surface use stipulations will apply to this section of the access route.

Soil Number	Soil Name	Slope	Ecological site	Salinity	Run Off	Erosion Potential	Bedrock
6	Barcus channery loamy sand	2-8%	Foothills Swale	<2	Slow	Moderate	>60
33	Forelle loam	3-8%	Rolling Loam	<2	Medium	Moderate	>60
36	Glendive fine sandy loam		Foothills Swale	2-4	Slow	Slight	>60
40	Hagga loam		Swale Meadow	2-8	Slow	Slight	>60
41	Havre loam	0-4%	Foothill Swale	<4	Medium	Slight	>60
64	Piceance fine sandy loam	5-15%	Rolling Loam	<2	Medium	Moderate to high	20-40
70	Redcreek-Rentsac complex	5-30%	PJ woodlands/PJ woodlands	<2	Very high	Moderate to high	10-20
73	Rentsac channery loam	5-50%	Pinyon-Juniper woodlands	<2	Rapid	Moderate to very high	10-20
75	Rentsac-Piceance complex	2-30%	PJ woodland/ Rolling Loam	<2	Medium	Moderate to high	10-20
91	Torriorthents-Rock Outcrop complex	15-90%	Stoney Foothills		Rapid	Very high	10-20
104	Yamac Loam	2-15%	Rolling Loam	<2	Medium	Slight to moderate	>60

Environmental Consequences of the Proposed Action: Construction of well pads and access roads will result in significant losses in vegetation and ground cover. Improper drainage from the project areas will increase potential for overland flows and accelerate erosional processes. Increased truck traffic will elevate soil compaction decreasing infiltration rates which in turn will also increase potential for erosive overland flows.

Leaks or spills of environmentally unfriendly substances (e.g. diesel or deep ground water) on or near the pad may contaminate soils hindering revegetation efforts. Soils unable to support a healthy plant community will be less cohesive (due to lack of root structure) and more vulnerable to erosional processes.

Environmental Consequences of the No Action Alternative: None

Mitigation: On the access route ID# 2, fragile soils encountered along the first 0.11 miles of the last 0.40 miles will have the controlled surface use stipulations applied. This stipulation is as follows: Surface disturbing activities will be allowed in these areas only after an engineered construction/reclamation plan is submitted by the operator and approved by the Area Manager. The following items must be addressed in the plan: 1) How soil productivity will be restored; 2) How surface runoff will be treated to avoid accelerated erosion such as riling, gullyng, piping, and mass wasting;

Comply with “Gold Book” surface operating standards for constructing well pads and access roads. Use drain dips in place of culverts on slopes exceeding 10%. Provide energy dissipaters at culvert outlets or drainage dips to minimize additional erosion.

Flow deflectors and sediment traps (woody debris) must also be utilized in attempts to mitigate erosive potential of overland flows. Stockpiled soils must be covered and silt fences will be situated down gradient

To mitigate contamination of soils and local ground water, environmentally unfriendly substances (e.g. diesel and deep ground water) must not be allowed to contact soils. The use of impermeable matting under equipment is suggested to intercept such contaminants prior to contacting soils. Deep ground water will NOT be disposed of on the surface without a BLM approved water treatment, disposal and monitoring plan.

To reduce the impacts of compaction and rut development caused by increased traffic on newly constructed access roads, only BLM authorized motorized vehicle travel will be permitted. Gate installation combined with additional physical obstructions (e.g. rock boulders) will be necessary to keep unauthorized traffic from deteriorating the roadway.

Complete reclamation will follow abandonment of well pad. Access road and well pad will be recontoured and 100% of disturbed surfaces will be revegetated with Native Seed Mix #2.

Finding on the Public Land Health Standard for upland soils: At the present time, soils in the vicinity of the proposed actions exhibit infiltration and permeability rates that are appropriate to soil type, landform, climate, and geologic processes. The proposed actions will cause decreases in both infiltration and permeability rates due to soil compaction and loss of vegetal cover. However, following proper mitigation the state of soil health should not be greatly changed from current conditions.

VEGETATION (includes a finding on Standard 3)

Affected Environment: The following table summarizes the vegetation involved with each of the proposed actions.

Ecological site/vegetation description by location		
Well Pad Number	Ecological Range Site	Successional Stage
19-2	Pinyon-Juniper Woodland	
20-7	Rolling loam	
21.1	Foothill swale	
22-4*	Rolling loam	stage 1 of PJ invasion process
23-15	Pinyon-juniper/Rolling loam	stage 1 of P-J invasion
24-21	Rolling loam	stage 1 of PJ invasion process
25-10	Pinyon-juniper woodland	young
39-1	Mature pinyon-juniper woodland	
40-1	Pinyon-juniper woodland	
41-1	Rolling loam	stage 1 of PJ invasion process

Ecological site/vegetation description by location		
Well Pad Number	Ecological Range Site	Successional Stage
42-1	Rolling loam	stage 1 of PJ invasion process
43-1	Pinyon –juniper woodland/Rolling loam	stage 1 transition
44-2	Foothill swale	early seral
45-1	Rolling loam	stage 1 of PJ invasion process
46-2	Rolling loam	stage 1 of PJ invasion process

Environmental Consequences of the Proposed Action: The proposed operations will disturb from 27- 40 acres in primarily the Rolling Loam ecological site and to a lesser extent in Pinyon-juniper woodland.. The principal negative impact to vegetation will be through fragmentation of the existing vegetation and transformation of the landscape from one that is rural and relatively undeveloped to semi- industrialized state.

Environmental Consequences of the No Action Alternative: There will be no change from the present situation.

Mitigation: Promptly recontour and revegetate all disturbed areas with Native Seed Mixture #2. Monitor the project site for a minimum of three years post disturbance for the occurrence of noxious/invasive species. Eradicate all noxious/invasive species using materials and methods approved by the Authorized Officer.

Native Seed Mix # 2		
Western wheatgrass (Rosanna)	2	Deep Loam, Loamy 10"-14", Loamy Breaks, Loamy Slopes, Rolling Loam, Valley Bench
Indian ricegrass (Rimrock)	1	
Bluebunch wheatgrass (Whitmar)	2	
Thickspike wheatgrass (Critana)	2	
Needle and thread	1	
Globemallow	0.5	
Fourwing saltbush (Wytana)	0.5	

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): Rangelands in the project area currently meet the Standard. Continued development such as the present action will compromise their capability to meet the Standard in the future principally due to landscape fragmentation.

WILDLIFE, TERRESTRIAL (includes a finding on Standard 3)

Affected Environment: The proposed project area is encompassed by the general winter ranges of deer and elk. These ranges are generally occupied by the largest number of animals from October through January and April through early May. One of the most important functions of these ranges is fulfilled during the early spring periods (April through early May) when big game are most vulnerable to the influences of poor nutrition and extraneous energy demands (e.g., winter season recovery, last stages of gestation). Current road density in the immediate project area is a minimum 2.2 miles per square mile. Up to 4.5 miles of new access would be required for these wells. Pad series 39-46, pad 20, and pad series 23/25 are located in

areas that are presently unroaded. The remaining wells have been moved to lie immediately adjacent to existing roads.

The proposed action involves a limited amount of mature woodland that represents high quality raptor nest habitat (primarily associated with pad and access for numbers 20 and 39, 40, 42, and 43). The remaining 6 locations are sited in younger age-class (50-75 year) regeneration associated with sagebrush encroachment, stands with submature conformation, or are located immediately adjacent to county roads--sites that are rarely selected for raptor nesting. The area potentially influenced by the proposed action was surveyed for woodland raptor nesting activity by contracted wildlife biologists during the 2005 nesting season. One functional nest, recorded as an accipiter nest, was found adjacent to the 22 pad on the edge of a fenceline right-of-way and two-track. BLM follow-up in mid-June showed this site to be inactive and, based on construction materials and location in the canopy, is a suspected red-tailed hawk site. An active Cooper's hawk nest was found on Wolf Ridge on 5/6 July and held 1 large downy nestling. This site is about 100 meters from an existing road and about 150 meters southwest of a previously drilled hydrologic monitoring well. At their closest point, proposed well 43 and the access for both 43 and 46 lies about 270 feet northwest of this nest. Based on the age of this chick at discovery, the chick should be capable of fledging by the first of August.

Other small mammals and birds using this area are typical and widely distributed in extensive like habitats across the Resource Area and northwest Colorado; there are no narrowly endemic or highly specialized species known to inhabit those lands potentially influenced by this action.

Environmental Consequences of the Proposed Action: Although vegetation clearing attributable to this short term (2-3 year) project would amount to about 23 acres, only about 2 acres of mature woodland would be involved, with the remaining clearing conducted immediately adjacent to existing roads or in historic sagebrush parks heavily encroached with pinyon-juniper regeneration—habitats that generally support relatively depauperate non-game wildlife communities. Temporary herbaceous and woody forage and cover loss at these levels are of no consequence to resident wildlife at landscape scales approaching 20 square miles.

Woodland canopies would be altered in a narrow (about 15-feet wide) linear pattern. It is intended that construction objectives which minimize the involvement of more mature elements of the woodland community, as discussed with proponent representatives during previous on-sites, be applied to this project. Access routing objectives established during project on-sites prioritizes the clearing of submature trees, regeneration, and large woody debris and would substantially reduce long term changes in woodland character such that mature woodland habitats (and the species that depend on them) would remain essentially unaffected in the long term. In the case of specific raptor nest features, the 22 pad has been moved to a position adjacent to the county road about 800 feet NNE and no longer poses a risk to future occupancy.

The Cooper's hawk nest is located in a position that makes it vulnerable to disturbance by all drilling and support traffic associated with the 39-x-299 through 46-x-299 series, but particularly well pad and access construction for the 43 and 46 wells. These wells and access roads are expected to have no direct influence on nest site suitability, but depending on nest chronology, drilling and construction activity would be capable of adversely affecting nest site selection or

nest success. Standard raptor nest timing limitation WR-23 applied to the entire series of wells in (or near) the NW1/4 of section 1, T2S, R99W would relegate disruptive work to periods outside important raptor nesting timeframes. Future periodic monitoring of the nest site would have no adverse influence on subsequent nest efforts.

Big game impacts associated with unregulated vehicle use (i.e., behavioral avoidance and habitat disuse; increased energetic demands during critical timeframes) received prominent address in the White River ROD/RMP. To stabilize open road density and its influence on big game physiology and habitat utility, an effective road density objective of ≤ 3 miles per square mile was established in the RMP on big game winter ranges.

Without means of effective control, proposed access would impinge substantially on about 300-400 acres of unroaded winter range and increase open road densities in the project area by about 15%, to a minimum density of 2.5 miles per square mile--adding cumulatively to the road network that will ultimately attend further oil and gas development on Piceance Basin's winter ranges. In an effort to reduce road proliferation and minimize the intensity and frequency of road use it is recommended that gates and fencing be used on 3 newly constructed pad access points. Restricting vehicle use to that associated only with hydrologic monitoring (i.e., 1 daily) would substantially reduce vehicle-related effects to big game.

By implementing effective vehicle deterrents and rehabilitation, the proposed action would yield no net increase in effective road density on Piceance Basin's winter range extent. The benefits associated with stabilized road density would include maintaining current levels of chronic road density-related influences (i.e., avoidance and disuse of adjacent forage and cover resources) on local big game winter ranges and aiding successful establishment of reclamation plantings. Additionally, and in an effort to deter subsequent vehicle use after hydrologic monitoring is complete (i.e., road abandonment), it is recommended that large woody debris cleared from these access routes be retained on-site to be evenly redistributed on the access at the completion of monitoring and appropriate reclamation and reseeding.

In the interest of reducing extraneous energy demands on deer during periods of occupation and nutritional ebb (i.e., early spring recovery and gestation) it would be desirable to schedule construction and drilling operations outside the months of December and April. As mentioned, one of the primary functions of these winter/early spring ranges for big game is nutritional recovery after the winter season. It is recommended that a preinoculated prostrate alfalfa (e.g., variety Travois), as a highly palatable and nutritious legume, be included in the seed mix at a rate of 2 pounds Pure Live Seed per acre.

By implementing reclamation measures and design features as recommended in the mitigation section, short and long term habitat integrity, particularly for big game, woodland dwelling raptors, and associated non-game species, would remain essentially unaffected.

Environmental Consequences of the No Action Alternative: There would be no action authorized that would have potential to influence resident wildlife habitat or populations.

Mitigation: To minimize the intensity and frequency of vehicle use on newly constructed access roads it is recommended that fencing be strategically placed to effectively preclude use of well access by vehicles not associated with hydrologic monitoring activity. Fence locations shall be coordinated with the BLM through the Authorized Officer and would involve location 20-7-298 (south of the Questar pipeline corridor), common access to the 25-10-298 and 23-15-298, and the well series 39-x-299 through 46-x-299 that originates from the existing trail or previously developed well 4-1-299H. It is intended that gates be locked at all times over the course of monitoring. In an effort to eliminate these temporary access roads after their intended use, it is recommended that, after appropriate reclamation, woody material cleared from the right-of-way and stored adjacent to the right-of-way be redistributed in a manner that effectively deters subsequent vehicle use.

As negotiated with the project proponent, pads 19, 21, 22, and 24 are to be moved immediately adjacent or as close as practical to existing roads. The 22 pad has been moved to a position adjacent to the county road about 800 feet NNE of the original proposal so as to maintain the functional status of the red-tailed hawk nest site.

No development (i.e., pad or access construction, drilling, completion) activities will be allowed on the 39-x-299 through 46-x-299 series (within or near the NW1/4 section 1, T2S, R99W) from April 1 through August 15 or until fledgling and dispersal of young from the Cooper's hawk nest site found in July 2005 or raptor nesting subsequently found in this area. The White River Field Office Manager may modify the size of the stipulation area or duration of its application if further analysis (i.e., based on project timing, nest chronology, and/or nest status in 2006) by BLM staff biologists indicates that portions of the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupation.

A pre-inoculated prostrate alfalfa (e.g., variety Travois) will be included in reclamation at a rate of 2 pounds Pure Live Seed per acre. Planting techniques appropriate to alfalfa should be observed.

In the interest of reducing extraneous energy demands on deer during occupation periods, clearing and drilling operations associated with the following locations should be scheduled to avoid the months of December and April: the 23-15-298/25-10-298 series, pad 20-7-298, and the 39-x-299 through 46-x-299 well series.

In the event raptor nests are found subsequent to drilling and/or clearing operations, application of standard raptor nest timing limitations (RMP TL-04/WR-23) will be applied to protect subsequent nest efforts. Timing limitations would be excepted in those instances where nest occupation had not commenced by mid-May of each nesting year.

It is intended that construction objectives which minimize the involvement of more mature elements of the woodland community, as discussed with proponent representatives during previous on-sites, be applied to this project. Access routing objectives established during project on-sites prioritizes the clearing of submature trees, regeneration, and large woody debris and would substantially reduce long term changes in woodland character such that mature woodland

habitats (and the species that depend on them) would remain essentially unaffected in the long term.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation and Wildlife, Aquatic): The landscapes associated with the proposed action currently meet the land health standards for terrestrial wildlife communities. Access road (i.e., 20, 39, 43) and pad clearing (i.e., 39) associated with the proposed action would remove a modest amount of mature woodland cover in the long term (i.e., about 2 acres), but given construction objectives discussed during previous on-sites to minimize the involvement of more mature elements of the woodland community, the action would not detract appreciably from current woodland character or function. Subsequent reclamation of these disturbed areas with a native seed mixture and precluding subsequent vehicle use would be consistent with continued meeting of the land health standards for terrestrial game and non-game wildlife populations.

Uncontrolled vehicle use and road proliferation that would attend temporary access development on the 20, 23/25, and 39-46 series would aggravate road-related effects on, most prominently, big game winter range habitats (e.g., elevated energy demands and habitat disuse) by adding about 4.5 miles to local road densities. Failing to effectively deter subsequent vehicle use, as provided for in proposed mitigation, would reduce the present big game winter range utility on about 300 to 400 acres in the long term. This effect would represent an avoidable landscape-scale modification that is inconsistent with maintaining the land health standard for animals (e.g., maintaining animal density in balance with habitat/landscape potential and exhibiting resilience to human activities).

The no-action alternative would have no influence on the continued meeting of the land health standard for animals.

OTHER NON-CRITICAL ELEMENTS: For the following elements, only those brought forward for analysis will be addressed further.

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Access and Transportation		X	
Cadastral Survey	X		
Fire Management		X	
Forest Management		X	
Geology and Minerals			X
Hydrology/Water Rights		X	
Law Enforcement		X	
Noise	X		
Paleontology			X
Rangeland Management			X
Realty Authorizations			X
Recreation			X

Non-Critical Element	NA or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Socio-Economics		X	
Visual Resources			X
Wild Horses			X

FOREST MANAGEMENT

Affected Environment: Wells 19-2, 39-1 would be constructed within mature pinyon/juniper woodlands. These woodlands are considered as commercial woodlands, within our current Resource Management Plan. The access roads to wells 20-7 and 39-1 and 43-1 would be constructed within P/J woodlands. Both of the ridgetops on which development is proposed contain pinyon/juniper sale tracts which were harvested during the mid-1980s. These mature woodlands provide some products for the local market including firewood and posts.

Environmental Consequences of the Proposed Action: In total the project would remove approximately 5.25 acres of commercial P/J woodland. Following reclamation pinyon and juniper would invade these sites and develop into a mature stand. Development of a mature stand would require between 200 and 300 years. Removal of 5.25 acres would be considered within the decadal allowable harvest limits for the Piceance Basin would account for 2.5% of this limit.

Environmental Consequences of the No Action Alternative: There would be no impacts.

Mitigation: From Appendix B, of the White River RMP of 1997. #7. All trees removed in the process of construction shall be purchased from the Bureau of Land Management. The trees shall be cut with a maximum stump height of six inches and disposed of by one of the following methods:

- a. Trees must be cut before being dozed off the area of disturbance. Trees shall be cut into four-foot lengths, down to four inches in diameter and placed along the edge of the disturbance.
- b. Purchased trees may be removed from federal land for resale or private use. Limbs may be scattered off the area of disturbance but not dozed off.
- c. Chipped and scattered.

GEOLOGY AND MINERALS

Affected Environment: The surface geology of all the well pads is either Uinta or quaternary alluvium. All of the wells will penetrate the oil shale including the Mahogany Zone (R-7) of the Green River formation to below the L-1. Aquifers encountered include the A-groove and B-groove. There is potential for a perched aquifer above the A-groove in the Uinta

formation and there is potential for very poor quality water near the base of the R-6 and top of L-5 also known in some areas as the Dissolution Surface.

Proposed well pad 22-4-298 is located on Federal Sodium Lease COC-0120057 and well pad 23-15-298 is located in an area identified in the ROD/RMP as available for multi-mineral leasing. All remaining well pads are located in an area identified as available for oil shale leasing. All wells are located on existing Federal Oil and Gas Leases.

Environmental Consequences of the Proposed Action: If the wells are not completed or plugged properly or if well is left as an open hole for a period of time there is potential for cross-aquifer contamination.

Environmental Consequences of the No Action Alternative: Additional knowledge of the oil shale and hydrologic resources in the area will not occur.

Mitigation: All information and drilling records for each well must be submitted to the White River Field Office. This includes, but is not limited to, water quality data for each zone, all geologic and electric logs, and well completion reports. To prevent cross-aquifer contamination, the isolation cementing during plugging of the core holes should also include cement plug between the top of the A-groove and the base of Uinta formation. The hydrology wells and core holes converted to hydrology wells need to be completed in one and only one zone.

PALEONTOLOGY

Affected Environment: Wells 19-2-299, 20-7-299, 21-1-298, 22-4-298, 23-15-298, 24-21-298, 25-10-298, pads and access roads: have been inventoried at the Class III (100% pedestrian) level (Young 2005, Compliance Dated 6/15/2005) with no fossil resources located on the well pad or along the proposed road. Wells 39-1-299, 40-1-299, 41-1-299, 42-1-299, 43-1-299, 44-2-299, 45-1-299, 46-2-299 pads and access roads are located in an area mapped as the Uinta Formation (Tweto 1979) which the BLM has classified as a Condition I formation meaning it is known to produce scientifically important fossil resources.

Environmental Consequences of the Proposed Action: For wells 19-2-299, 20-7-299, 21-1-298, 22-4-298, 23-15-298, 24-21-298 25-10-298 pads and access roads, will not impact any known fossil resources however, if it should become necessary to excavate into the underlying rock formation there is a potential to impact scientifically important fossil resources.

For wells 39-1-299, 40-1-299, 41-1-299, 42-1-299, 43-1-299, 44-2-299, 45-1-299, 46-2-299, pads and access roads: If, at any time it becomes necessary to excavate into the underlying bedrock formation to build an access road, level a pad or excavate a reserve/blooiie pit there is a potential to impact scientifically important fossil resources.

Environmental Consequences of the No Action Alternative: There would be no new impacts to fossil resources under the No Action Alternative.

Mitigation: For all wells and access roads: 1. All exposed rock outcrops shall be examined for fossil resources by an approved paleontologist, with a report detailing the results of the examination and any recommended mitigation shall be submitted to the BLM prior the initiation of construction. Additional mitigation measures may be necessary for locations where fossil remains are found or suspected.

2. If at any time it becomes necessary to excavate into the underlying rock a paleontological monitor shall be present.

3. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing paleontological sites, or for collecting fossils. If fossil materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear to be of noteworthy scientific interest
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not feasible)

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

RANGELAND MANAGEMENT

Affected Environment: The proposed locations are within the Reagles (06026) and Square S (06027) grazing allotments. The affected lands of both allotments are licensed for spring/fall cattle use on an annual basis.

Environmental Consequences of the Proposed Action: The primary negative impact of this operation will occur is Shell fails to maintain fence integrity, allowing for inter-allotment livestock trespass. The proposed action will disturb and remove from production 27.5 acres at a minimum resulting in a loss of about 4 AUMS of forage production. This will likely be a permanent loss. Since June 1 is given as the date when the operations will take begin, we can assume that use of roads during dry conditions will coat forage plants adjacent to roads making them unpalatable for use. If these conditions occur Shell will be required to water access roads.

Environmental Consequences of the No Action Alternative: there will be no change from the present situation of a relatively undeveloped, unfragmented rangeland environment.

Mitigation: The integrity of the fence crossings for the access to 25-10 and 20-7 must be maintained at all times. In order to accomplish this, H braces built to BLM specifications will be constructed on either side of the proposed cut, the wire cut and stretched and a 16 foot minimum width tubular steel gate will be installed where the access road leaves the county road in Stake Springs. The fence will be properly braced and a gate installed where the access road to 25-10 crosses the Square S allotment boundary fence in Sec. 10, SESE. If these gates are left open, Shell will required to immediately install cattleguards.

REALTY AUTHORIZATIONS

Affected Environment: There are several existing rights-of-way that would be affected by the construction of several of the proposed pads.

Environmental Consequences of the Proposed Action: Pad 22-4-298 is located entirely within an existing R&PP lease that is issued to Colorado State University (CSU) for study plots (COC34299-01) and will have to be moved if Shell cannot get CSU to agree to allow this proposed action within their lease. Two pipelines (COC0123685 & COC52705) cross the area proposed for pad 22-4-298.

Pad 24-21-298 had two pipelines (COC24022 & COC23293) that cross the area that has been selected for this pad.

The pads located in T. 2 S., R. 99 W., Sections 1 & 2 are crossed by several rights-of-way. Pipelines – COC52705, COC0123685, COC27134; Power line – COC39349, and an access road – COC59309.

Environmental Consequences of the No Action Alternative: Under the no action alternative there would not be any impacts.

Mitigation: 1. The Colorado One Call system would have to be notified before any construction can begin.

2. On Pad 22-4-298 a letter of confirmation from CSO will have to be provided by the holder to the authorized officer that states they have no problems with this proposed pad construction and use.

3. Standard stipulation regarding road construction will be applied from the BLM right-of-way manual.

RECREATION

Affected Environment: The proposed action occurs within the White River Extensive Recreation Management Area (ERMA). BLM custodially manages the ERMA to provide for

unstructured recreation activities such as hunting, dispersed camping, hiking, horseback riding, wildlife viewing and off-highway vehicle use.

Proposed roads and pads 21-1-299, 20-7-298, 23-15-298 and 24-21-298 are located in areas delineated a Recreation Opportunity Spectrum (ROS) class of Semi-Primitive Motorized (SPM). SPM physical and social recreation setting is typically characterized by a natural appearing environment with few administrative controls, low interaction between users but evidence of other users may be present. SPM recreation experience is characterized by a high probability of isolation from the sights and sounds of humans that offers an environment that offers challenge and risk.

Proposed roads and pads 19-2-229, 44-2-229, 45-1-299, 46-2-299, 41-1-299, 40-1-299, 39-1-299, 22-4-298 and 25-10-298 are located in areas delineated Recreation Opportunity Spectrum (ROS) class of Roaded Natural (RN). RN physical and social recreation setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However, from sensitive travel routes and use areas these alterations would remain unnoticed or visually subordinate. There is strong evidence of designed roads and/or highways. Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive travel route observer. Structures may include utility corridors, microwave installations and so on. Frequency of contact is moderate to high on roads and low to moderate on trails and away from roads. SPM recreation experience is characterized by a moderate probability of isolation from the sights and sounds of humans that offers an environment that offers challenge and risk.

Environmental Consequences of the Proposed Action: The public will lose approximately 25 acres of dispersed recreation potential while wells are in operation. The public will most likely not recreate in the vicinity of these facilities and will be dispersed elsewhere. If action coincides with hunting seasons (September through November) it will most likely disrupt the experience sought by those recreationists.

With the introduction of new well pads and roads, an increase of traffic could be expected increasing the likelihood of human interactions, the sights and sounds associated with the human environment and a less naturally appearing environment.

Environmental Consequences of the No Action Alternative: No loss of dispersed recreation potential and no impact to hunting recreationists.

Mitigation: None.

VISUAL RESOURCES

Affected Environment: The proposed actions would be located in an area with a VRM III classification. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes

should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Environmental Consequences of the Proposed Action: The proposed action would be located away from RBC road # 5, which is the route most frequently traveled by a casual observer. The proposed action would be located off of but in close proximity to several unpaved roads with low volumes of traffic. The approximately one acre pads located in pinyon/juniper would resemble natural parks or clearings common to the area. The level of change to the characteristic landscape would be low and the objectives of the VRM III classification would be retained.

Environmental Consequences of the No Action Alternative: There would be no additional impacts.

Mitigation: Paint any above ground facilities Juniper Green to blend with surrounding vegetation.

WILD HORSES

Affected Environment: A portion of the proposed project locations (19-2; 21-1; 39-1; 40-1; 41-1; 42-1; 43-1; 44-2; 45-1; 46-2) are located in the Square S; Pasture C portion of the Piceance-East Douglas wild horse herd management area (HMA). Wild horses in the Square S Pasture “C” are blocked by an allotment boundary fence from the remainder of their HMA and rely on Pasture “C” to provide long-term, desirable habitat and the critical elements forage; water and cover.

Wells 19-2 and 39-1 and access roads to wells 39-1 and 43-1 are proposed within mature pinyon/juniper woodlands.

Environmental Consequences of the Proposed Action: The principal negative impact to wild horses will be fragmentation of their late fall, winter and spring range and loss of habitat. Disturbance from construction of well pads and access roads in the Square S Pasture “C” would result in the loss of 15.86 acres of wild horse habitat. Pads and access roads constructed in mature stands of P/J would decrease the cover critical for wild horses during inclement weather extremes and used by newborn foals for protection from predation.

Environmental Consequences of the No Action Alternative: Selection of the No Action Alternative would result in no impacts to the Square S Pasture “C” population of wild horses.

Mitigation: LN-3 (WR-33) Wild Horse Habitat: This lease parcel encompasses a portion of the wild horse herd management area. In order to protect wild horses within this area, intensive development activities may be delayed for a specified 60 day period within the spring foaling period between March 1 and June 15.

CUMULATIVE IMPACTS SUMMARY: This action is consistent with the scope of impacts addressed in the White River ROD/RMP. The cumulative impacts of oil shale exploration activities are addressed in the White River ROD/RMP for each resource value that would be affected by the proposed action.

REFERENCES CITED:

Conner, Carl E. and Barbara J. Davenport

- 2004 Class III Cultural Resource Inventory Report for Six Proposed Well Locations and Related Access Routes in the Canary and Left Fork Units in Rio Blanco County, Colorado, for Encana Oil and Gas (USA) Inc. Grand River Institute, Grand Junction, Colorado.

Conner, Carl E., Curtis Martin, Nicole Darnell, and Barbara J. Davenport

- 2004 2004 Experimental Project Site: A Class III Cultural Resources Inventory Report for a 920-Acre Block in Rio Blanco County, Colorado, Colorado, for Shell Frontier Oil and Gas. Grand River Institute, Grand Junction, Colorado.

Conner, Carl E., Curtis Martin, Barbara Davenport, and Nicole Darnell

- 2005 2005 Piceance Basin Study: A Class III Cultural Resources Inventory of Six Proposed Drill Holes and Related Access Routes in Rio Blanco County, Colorado for Shell Frontier Oil and Gas. Grand River Institute, Grand Junction, Colorado.

Knox, Donna Jean

- 1981 Report of Examination for Cultural Resources: Sungas Well #2-2-99 and Access. Gordon and Kranzush, Inc., Boulder, Colorado.

Tweto, Odgen

- 1979 Geologic Map of Colorado. United States Geologic Survey, Department of the Interior, Reston, Virginia.

PERSONS / AGENCIES CONSULTED: None

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility
Nate Dieterich	Hydrologist	Air Quality
Tamara Meagley	Natural Resource Specialist	Areas of Critical Environmental Concern
Tamara Meagley	Natural Resource Specialist	Threatened and Endangered Plant Species
Michael Selle	Archaeologist	Cultural Resources Paleontological Resources
Mark Hafkenschiel	Rangeland Management Specialist	Invasive, Non-Native Species
Ed Hollowed	Wildlife Biologist	Migratory Birds

Name	Title	Area of Responsibility
Ed Hollowed	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species
Bo Brown	Hazmat Collateral	Wastes, Hazardous or Solid
Nate Dieterich	Hydrologist	Water Quality, Surface and Ground Hydrology and Water Rights
Ed Hollowed	Wildlife Biologist	Wetlands and Riparian Zones
Chris Ham	Outdoor Recreation Planner	Wilderness
Nate Dieterich	Hydrologist	Soils
Mark Hafkenschiel	Rangeland Management Specialist	Vegetation
Ed Hollowed	Wildlife Biologist	Wildlife Terrestrial and Aquatic
Chris Ham	Outdoor Recreation Planner	Access and Transportation
Ken Holsinger	Natural Resource Specialist	Fire Management
Robert Fowler	Forester	Forest Management
Paul Daggett	Geologist	Geology and Minerals
Mark Hafkenschiel	Rangeland Management Specialist	Rangeland Management
Penny Brown	Realty Specialist	Realty Authorizations
Chris Ham	Outdoor Recreation Planner	Recreation
Keith Whitaker	Natural Resource Specialist	Visual Resources
Valerie Dobrich	Natural Resource Specialist	Wild Horses

Finding of No Significant Impact/Decision Record (FONSI/DR)

CO-110-2005-060-EA

FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE: The environmental assessment and analyzing the environmental effects of the proposed action have been reviewed. The approved mitigation measures (listed below) result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION/RATIONALE: It is my decision to approve the proposed action with the below listed mitigation measures.

MITIGATION MEASURES: 1. The operator will be responsible for complying with all local, state, and federal air quality regulations as well as providing documentation to the BLM that they have done so. To minimize production of fugitive dust, vehicle speeds shall not exceed 15 mph or the application of a dust suppressant (e.g. water or “Dust Stop”) will be required during dry periods. Any stockpiled soils associated with road repair or upgrading must be covered.

2. For all wells and access roads, 1. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the AO to complete an expedited review under 36 CFR 800-11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

3. For all wells and access roads: Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

4. Well #20-7-299 pad and access road: all access road construction and maintenance activity must avoid site 5RB 4987.

5. Well #43-1-299 pad and access road: No work may proceed on the pad or access road until an inventory report prepared by an approved archeological contractor has been submitted to the BLM and approved, with additional stipulations as needed.

6. Well #46-2-299 access and pad locations, no work may proceed on the pad or access road until an inventory report on the un-inventoried portion of the access road, prepared by an approved archeological contractor, has been submitted to the BLM and approved, with additional stipulations as needed.

7. Monitor the project site for a minimum of three years post disturbance for the occurrence of noxious/invasive species. Eradicate all noxious/invasive species using materials and methods approved by the Authorized Officer.

8. The following well locations should not be constructed until the inventory has been completed with a report submitted to this office for review by the Specialist and reveals there will be no affect to Threatened or Sensitive Species of plants.

- Well # 25-10-298
- Well # 23-15-298
- Well # 24-21-298

9. The applicant shall be required to collect and properly dispose of any solid wastes generated by the proposed actions.

10. No operations using chemical processes or other pollutants in their activities will be allowed to occur within 200 feet of any water bodies. The operator will be responsible for complying with all local, state, and federal water quality regulations as well as providing documentation to the BLM that they have done so.

11. To mitigate contamination of surface and ground water, environmentally unfriendly substances (e.g. diesel and deep ground water) must not be allowed to contact soils. The use of impermeable matting under equipment is suggested to intercept such contaminants prior to contacting soils. Deep ground water will NOT be disposed of on the surface without a BLM approved water treatment, disposal and monitoring plan.

To mitigate cross aquifer contamination, any hole proposed for groundwater monitoring must be competed and cemented to isolate all aquifer intervals that show significant head differences or changes in water quality.

12. The Operator will comply with the Surface Operating Standards for Oil and Gas Exploration and Development (i.e. "Gold Book") for constructing well pads and access roads. Use drain dips in place of culverts on slopes exceeding 10%. Provide energy dissipaters at culvert outlets or drainage dips to minimize additional erosion.

13. On the access route ID# 2, fragile soils encountered along the first 0.11 miles of the last 0.40 miles will have the controlled surface use stipulations applied. This stipulation is as follows: Surface disturbing activities will be allowed in these areas only after an engineered construction/reclamation plan is submitted by the operator and approved by the Area Manager. The following items must be addressed in the plan: 1) How soil productivity will be restored; 2) How surface runoff will be treated to avoid accelerated erosion such as riling, gullyng, piping, and mass wasting;

14. Flow deflectors and sediment traps (woody debris) must also be utilized in attempts to mitigate erosive potential of overland flows. Stockpiled soils must be covered and silt fences will be situated down gradient

15. To minimize the intensity and frequency of vehicle use on newly constructed access roads it shall be required that fencing be strategically placed to effectively preclude use of well access by vehicles not associated with hydrologic monitoring activity. Fence locations shall be coordinated with the BLM through the Authorized Officer and would involve location 20-7-298 (south of the Questar pipeline corridor), common access to the 25-10-298 and 23-15-298, and the well series 39-x-299 through 46-x-299 that originates from previously developed well 4-1-299H. It is intended that gates be locked at all times over the course of monitoring. In an effort to eliminate these temporary access roads after their intended use, it is recommended that, after appropriate reclamation, woody material cleared from the right-of-way and stored adjacent to the right-of-way be redistributed in a manner that effectively deters subsequent vehicle use.

16. As negotiated with the project proponent, pads 19-2, 21-1, 22-4, and 24-21 are to be moved immediately adjacent or as close as practical to existing roads. The 22-4 pad has been moved to a position adjacent to the county road about 800 feet NNE of the original proposal so as to maintain the functional status of the red-tailed hawk nest site.

17. A pre-inoculated prostrate alfalfa (e.g., variety Travois) will be included in reclamation at a rate of 2 pounds Pure Live Seed per acre. Planting techniques appropriate to alfalfa should be observed.

18. In the interest of reducing extraneous energy demands on deer during occupation periods, clearing and drilling operations associated with the following locations shall be scheduled to avoid the months of December and April: the 23-15-298/25-10-298 series, pad 20-7-298, and the 39-x-299 through 46-x-299 well series.

19. In the event raptor nests are found subsequent to drilling and/or clearing operations, application of standard raptor nest timing limitations (RMP TL-04/WR-23) will be applied to protect subsequent nest efforts. Timing limitations would be excepted in those instances where nest occupation had not commenced by mid-May of each nesting year.

20. It is intended that construction objectives which minimize the involvement of more mature elements of the woodland community, as discussed with proponent representatives during previous on-sites, be applied to this project. Access routing objectives established during project on-sites prioritizes the clearing of submature trees, regeneration, and large woody debris and would substantially reduce long term changes in woodland character such that mature woodland habitats (and the species that depend on them) would remain essentially unaffected in the long term.

21. To reduce the impacts of compaction and rut development caused by increased traffic on newly constructed access roads, only BLM authorized motorized vehicle travel will be permitted. Gate installation combined with additional physical obstructions (e.g. rock boulders) will be necessary to keep unauthorized traffic from deteriorating the roadway.

22. Promptly recontour and revegetate all disturbed areas with Native Seed Mixture #2. Monitor the project site for a minimum of three years post disturbance for the occurrence of noxious/invasive species. Eradicate all noxious/invasive species using materials and methods approved by the Authorized Officer.

Native Seed Mix # 2		
Western wheatgrass (Rosanna)	2	Deep Loam, Loamy 10"-14", Loamy Breaks, Loamy Slopes, Rolling Loam, Valley Bench
Indian ricegrass (Rimrock)	1	
Bluebunch wheatgrass (Whitmar)	2	
Thickspike wheatgrass (Critana)	2	
Needle and thread	1	
Globemallow	0.5	
Fourwing saltbush (Wytana)	0.5	

23. From Appendix B, of the White River ROD/RMP of 1997. #7: All trees removed in the process of construction shall be purchased from the Bureau of Land Management. The trees shall be cut with a maximum stump height of six inches and disposed of by one of the following methods:

a. Trees must be cut before being dozed off the area of disturbance. Trees shall be cut into four-foot lengths, down to four inches in diameter and placed along the edge of the disturbance.

b. Purchased trees may be removed from federal land for resale or private use. Limbs may be scattered off the area of disturbance but not dozed off.

c. Chipped and scattered.

24. All information and drilling records for each well must be submitted to the White River Field Office. This includes, but is not limited to, water quality data for each zone, all geologic and electric logs, and well completion reports. To prevent cross-aquifer contamination, the isolation cementing during plugging of the core holes shall also include cement plugs between the top of the A-groove and the base of Uinta formation. The hydrology wells and core holes converted to hydrology wells need to be completed in one and only one zone.

25. All exposed rock outcrops shall be examined for fossil resources by an approved paleontologist, with a report detailing the results of the examination and any recommended mitigation shall be submitted to the BLM prior the initiation of construction. Additional mitigation measures may be necessary for locations where fossil remains are found or suspected.

26. If at any time it becomes necessary to excavate into the underlying rock a paleontological monitor shall be present.

27. The operator is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for knowingly disturbing paleontological sites, or for collecting fossils. If fossil materials are uncovered during any project or construction activities, the operator is to immediately stop activities in the immediate area of the find that might further disturb such materials, and immediately contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear to be of noteworthy scientific interest
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not feasible)

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation cost. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

28. The integrity of the fence crossings for the access to 25-10 and 20-7 must be maintained at all times. In order to accomplish this, H braces built to BLM specifications will be constructed on either side of the proposed cut, the wire cut and stretched and a 16 foot minimum width tubular steel gate will be installed where the access road leaves the county road in Stake Springs. The fence will be properly braced and a gate installed where the access road to 25-10 crosses the Square S allotment boundary fence in Sec. 10, SESE. If these gates are left open, Shell will required to immediately install cattleguards.

29. The Colorado One Call system would have to be notified before any construction can begin.

30. On Pad 22-4-298 a letter of confirmation from CSO will have to be provided by the holder to the authorized officer that states they have no problems with this proposed pad construction and use.

31. Standard stipulation regarding road construction will be applied from the BLM right-of-way manual.

32. Paint any above ground facilities Juniper Green to blend with surrounding vegetation.

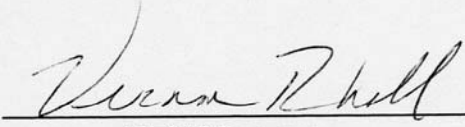
33. LN-3 (WR-33) Wild Horse Habitat: This lease parcel encompasses a portion of the wild horse herd management area. In order to protect wild horses within this area, intensive

development activities may be delayed for a specified 60 day period within the spring foaling period between March 1 and June 15.

COMPLIANCE/MONITORING: Compliance will be conducted by the realty staff upon completion of the pad construction and when reclamation is completed.

NAME OF PREPARER: Penny Brown

NAME OF ENVIRONMENTAL COORDINATOR: Caroline Hollowed

SIGNATURE OF AUTHORIZED OFFICIAL: 
Field Manager

DATE SIGNED: 7/13/05

ATTACHMENTS: Location map of the proposed action.
Access maps 1:24,000

Location of Proposed Action CO-110-2005-060-EA

